

REMARKS/ARGUMENTS

The Office Action mailed November 23, 2007 has been carefully reviewed. Reconsideration of this application, as amended and in view of the following remarks, is respectfully requested. The claims presented for examination are: claims 1-30.

35 U.S.C. § 112, First Paragraph Rejection (Written Description)

In numbered paragraph 3 of the Office Action mailed November 23, 2007, claims 1-30 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Rejection mailed November 23, 2007 stated:

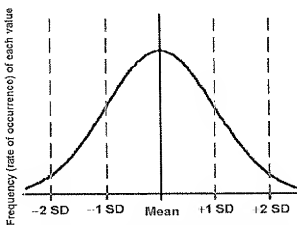
"The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 10, 17, and 24 recite limitation "random noise being unpredictable from one moment to the next". This limitation is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art, at the time the application was filed, had possession of the claimed invention. The specification states, "in one embodiment of the present invention, the media signal need only include random transducer noise having a noise signal amplitude". One example of how this can be done is "a lens-cap could be on the camera causing the scene to be perfectly quiescent." By putting the lens-cap on the camera the signal becomes more predictable, not "unpredictable" as claimed by the applicant. This is because the output of The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 10, 17, and 24 recite limitation "random noise being unpredictable from one moment to the next". This limitation is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art, at the time the application was filed, had possession of the claimed invention. The specification states, "in one embodiment of the present invention, the media signal need only include random transducer noise having a noise signal amplitude". One example of

how this can be done is "a lens-cap could be on the camera causing the scene to be perfectly quiescent." By putting the lens-cap on the camera the signal becomes more predictable, not "unpredictable" as claimed by the applicant. This is because the output of the camera signal when capturing a chaotic signal has two somewhat unpredictable signals added together to make a more unpredictable signal (i.e., $\text{Chaotic}_{\text{Signal}} + \text{Noise}_{\text{Signal}} = \text{Signal}$). The chaotic signal has more effect on the change in the quantized sample because the amplitude of a camera is going to have a much higher signal for the image captured by the camera than the noise produced by the camera. The chaotic signal would change several quantization levels when the image being captured is changed whereas if the quantization levels of the camera were set at a level close to the amplitude of the noise, as suggested by the specification, the quantized sample would only vary slightly (1-2 quantization levels) from the chaotic signal being captured. Therefore if the chaotic signal was replaced with a predictable signal by putting the lens-cap on, the resulting signal would be more predictable than before because the only changing data in the signal would be the noise from the transducer (camera), which only varies by a few quantization levels.

The random noise that is part of the claimed media signal is "white Gaussian noise" as disclosed in the specification. This noise is not "unpredictable" as claimed by the applicant because Gaussian noise is predictable based on the Gaussian Curve an example of which is shown below.



The graph shows that values that are closer to the mean are more likely to occur over time than values further away from the mean. Therefore "white Gaussian noise" is not "unpredictable" as currently recited in the claims.

The specification states, "Thus, even a perfectly quiescent media signal 104 (e.g., when a lens cap is on a video camera containing the transducer 102) will contain *some randomness* from the transducer noise." The applicant's specification then states, "Put another way, as long as a size of a smallest quantizer step is no larger than an amplitude of the transducer 102 noise, the quantized media signal 108 will include a *high level of randomness* even if

input to the transducer is perfectly quiescent." The applicant does not disclose: the steps required to go from "some randomness" to "high level of randomness"; and from "high level of randomness" the steps required to go to "random noise only" and being "unpredictable".

Further proof that the media signal disclosed in the specification does not contain data that is "unpredictable" is the compression and hashing steps that following the acquisition of the signal that is claimed to be "unpredictable". These steps as disclosed by the specification are used to reduce the predictability of the keyword generated. The compressed data stream is used to remove redundant data strings so that only differences between data frames are presented, and because frames of a compressed media signal can vary in size, sets of data can easily be taken from different parts of the frames, helping to limit the amount of redundant data collected. The hashing step is used because it "assures that the resultant identifier 311 varies significantly even if the set of data 309 only varies by one bit." If the data that was acquired originally was completely random and unpredictable, there would be no reason to go through these steps.

Claims 2-9, 11-16, 18-23, and 25-30 are rejected for depending on independent claims 1, 10, 17, and 24."

Applicants Had Possession of Claimed Invention

Applicants believe it is clear from the original specification that a person skilled in the art would recognize that the inventor had possession of the claimed invention including the claim limitation "random noise being unpredictable from one moment to the next" of claims 1, 10, 17, and 24. The limitation "random noise being unpredictable from one moment to the next" of Claims 1, 10, 17, and 24 and Applicants' original specification are compared below.

The Limitation

random noise being
unpredictable from one
moment to the next

Applicants' Original Specification

In one embodiment of the present invention, the media signal need only include random transducer noise having a noise signal amplitude. Random noise is not the same as a chaotic noise. Random noise, such as white Gaussian noise, is completely unpredictable from one moment to a next, while chaotic noise is highly predictable over short time periods. (Page 7, lines 10-15 of Applicants' Original Specification)

Applicants' specification discusses and describes "random noise" throughout the application. Applicants' specification in connection with FIG. 2 states, "The random noise in the media signal 104 will cause even unchanging video scenes to have quantization values 206 which fluctuate for media signal values close to one or more quantization steps 204. Typically, the transducer noise is sufficient to cause the quantization values 206 to fluctuate. However, if the transducer noise is small relative to the quantization steps 204, then either video or audio content of the media signal 104 must vary somewhat so that what little noise is in the scene will enable random noise to be quantized by the A/D converter 106. Randomness will be present in the media signal 104 when an actual sampled media signal value 208 is very close to a quantization boundary 210."

A person skilled in the art would recognize that the inventor had possession of the claimed invention including the claim limitation "random noise being unpredictable from one moment to the next" of claims 1, 10, 17, and 24. The concepts and fundamentals of "random noise" were well known in the prior art at the time Applicants filed their patent application. For example, the October 16, 1998 publication "DESIGN OF RANDOM NOISE GENERATOR USING SW ALGORITHM" by Jinkeun Hong, Sunchun Park, Janghong Yoon, Jaeyoung Koh, and Daeho Kim and the publication cited in the article describe concepts and fundamentals of "random noise." A copy of the October 16, 1998 publication "DESIGN OF RANDOM NOISE GENERATOR USING SW ALGORITHM" by Jinkeun Hong, Sunchun Park, Janghong Yoon, Jaeyoung Koh, and Daeho Kim was previously provided.

Person Skilled In The Art

The level of skill of a person skilled in the relevant art is very high being scientists with BS degrees in electrical engineering or computer sciences and

advanced degrees in electrical engineering or computer sciences. The lead inventor, Douglas R. Coffland, is Division Leader - Security Engineering and Computation Division of the Lawrence Livermore National Laboratory. The Lawrence Livermore National Laboratory (LLNL) is a premier applied science laboratory that is part of the National Nuclear Security Administration (NNSA) within the Department of Energy (DOE). The LLNL website states that LLNL employs 6,600 full-time employees, including 2,681 scientists and engineers of which 1,212 hold Ph.D degrees. The *Wikipedia, the free encyclopedia* describes the Lawrence Livermore National Laboratory. A copy of the *Wikipedia, the free encyclopedia* description of the Lawrence Livermore National Laboratory was previously provided.

The Lawrence Livermore National Laboratory computer operations are the best in the world. According to recent TOP500 lists, Computation operates some of the world's fastest supercomputers: BlueGene/L, a cooperative project to design and build a computer architecture capable of scaling to hundreds of teraflops (TF); ASC Purple, a genuinely huge machine based on symmetric shared-memory multiprocessors containing more than 12,000 next-generation IBM Power5 microprocessors and capable of 100 TF; and Thunder (right), a highly integrated, well-balanced capability compute resource with 1,024 nodes and a theoretical system peak performance of 22.9 TF. Copies of two pages from the Lawrence Livermore National Laboratory website www.llnl.gov were previously provided.

Encryption is of high importance to the National Nuclear Security Administration (NNSA), the Department of Energy (DOE), and the Lawrence Livermore National Laboratory. The lead inventor, Douglas R. Coffland, as Division Leader - Security Engineering and Computation Division of the Lawrence Livermore National Laboratory is highly skilled in Encryption. The

lead inventor, Douglas R. Coffland, as Division Leader - Security Engineering and Computation Division of the Lawrence Livermore National Laboratory had possession of the claimed invention including the claim limitation "random noise being unpredictable from one moment to the next" of claims 1, 10, 17, and 24.

Applicants' specification taken as a whole supports the claim limitation. MPEP § 2163 II.A.3 states, "An adequate written description of the invention may be shown by any description of sufficient, relevant, identifying characteristics so long as a person skilled in the art would recognize that the inventor had possession of the claimed invention."

There is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. In *re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976), the implication stated in the Rejection is contradicted by Applicants' specification taken as a whole. The implication stated in the Rejection is not sufficient to overcome the presumption that an adequate written description of the claimed invention is present when the application is filed.

The rejection of claims 1-30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement should be withdrawn.

35 U.S.C. § 112, First Paragraph Rejection (Disclosure)

In numbered paragraph 4 of the Office Action mailed November 23, 2007, claims 1-30 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly based on a disclosure which is not enabling.

The Rejection mailed November 23, 2007 stated:

"Multimedia encryption critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The preamble of claims 1 and 17 state "a system adapted for use for multimedia

encryption". The preamble of claim 10 states "a method adapted for use for multimedia encryption". The preamble for claim 24 states "a computer-usable medium embodying computer program code adapted for use for multimedia encryption". Both the specification and the claims disclose steps for producing a keyword which could be used as a key for encryption or a key for generating pseudo-random numbers that are later used in encryption, however, neither the specification nor the claims disclose any steps, elements or instructions that encrypt multimedia."

"Multimedia Encryption" Was Well Known

The concepts and fundamentals of term "multimedia encryption" were well known in the prior art at the time Applicants filed their patent application. The term "multimedia encryption" is part of the title of the subject application and is used throughout the patent application. Appellant's original specification describes the claimed invention sufficiently to enable one skilled in the relevant art to practice the invention and meets the requirements of 35 U.S.C. § 112, first paragraph.

Dr. Borko Furht, Chairman & Professor Department of Computer Science and Engineering, Florida Atlantic University, Boca Raton, FL had written numerous publications discussing the concepts and fundamentals of term "multimedia encryption" at the time Applicants filed their patent application. A list of Dr. Borko's publications and a copy of the publication "Fundamentals of Multimedia Encryption Techniques" by Dr. Borko were previously provided. Dr. Borko Furht's main areas of research were: "Image and video coding and processing," "Wireless multimedia technologies," and "Secure multimedia communications."

Person Skilled In The Art

The level of skill of a person skilled in the relevant art is very high being scientists with BS degrees in electrical engineering or computer sciences and advanced degrees in electrical engineering or computer sciences. The lead

inventor, Douglas R. Coffland, is Division Leader - Security Engineering and Computation Division of the Lawrence Livermore National Laboratory. The Lawrence Livermore National Laboratory (LLNL) is a premier applied science laboratory that is part of the National Nuclear Security Administration (NNSA) within the Department of Energy (DOE). The LLNL website states that LLNL employs 6,600 full-time employees, including 2,681 scientists and engineers of which 1,212 hold Ph.D degrees. The *Wikipedia, the free encyclopedia* describes the Lawrence Livermore National Laboratory. The *Wikipedia, the free encyclopedia* description of the Lawrence Livermore National Laboratory were previously provided.

There is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. In *re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976). Appellant's original specification contains an adequate written description of the claimed invention for a person skilled in the art to practice the claimed invention. Also, the concepts and fundamentals of term "multimedia encryption" were well known in the prior art at the time Applicants filed their patent application. Appellant submits that, based upon the original specification, a person skilled in the art could practice the claimed invention.

The 35 U.S.C. § 112, first paragraph, rejection of claims 1-30 as based on a disclosure which is not enabling should be withdrawn.

35 U.S.C. § 112, Second Paragraph Rejection (Distinctly Claim)

In numbered paragraph 6 of the Office Action mailed November 23, 2007, claims 1-30 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims Point Out and Distinctly Claim Invention

Applicants' claimed invention defined by independent claim 1 is "a system adapted for use for multimedia encryption." Claim 1 includes a combination of structural elements that produce the system adapted for use for multimedia encryption. The structural elements include "acquisition means for acquiring a media signal," "data compression means coupled to said acquisition means to receive and compress said media signal," "data acquisition means coupled to said data compression means to receive and select a set of data from the compressed data stream," and "hashing means coupled to said data acquisition means to receive and hash the set of data into a keyword." These structural elements produce the system adapted for use for multimedia encryption. There are no essential structural elements omitted.

Applicants' submits that claim 1 describes the invention sufficiently and particularly points out and distinctly claims the subject matter which applicant regards as the invention and claim 1 meets the requirements of 35 U.S.C. § 112, second paragraph.

Applicants' claimed invention defined by independent claim 10 is "a method adapted for use for multimedia encryption." Claim 10 includes a combination of steps. The steps include "acquiring a random noise only media signal," "compressing said random noise only media signal," "selecting a set of data from the compressed media signal," and "hashing the set of data into a keyword." There are no essential steps omitted.

Applicants' submits that claim 10 describes the invention sufficiently and particularly points out and distinctly claims the subject matter which applicant regards as the invention and claim 10 meets the requirements of 35 U.S.C. § 112, second paragraph.

Applicants' claimed invention defined by independent claim 17 is "a system adapted for use for multimedia encryption." Claim 17 includes a combination of structural elements that produce the system adapted for use for multimedia encryption. The structural elements include "acquisition means for acquiring a media signal," "data compression means coupled to said acquisition means to receive and compress said media signal," "selection means coupled to said data compression means for selecting a set of data from the compressed data stream," and "hashing means coupled to said selection means for hashing the set of data into a keyword." These structural elements produce the system adapted for use for multimedia encryption. There are no essential structural elements omitted.

Applicants' submits that claim 17 describes the invention sufficiently and particularly points out and distinctly claims the subject matter which applicant regards as the invention and claim 17 meets the requirements of 35 U.S.C. § 112, second paragraph.

Applicants' claimed invention defined by independent claim 24 is "a computer-useable medium embodying computer program code adapted for use for multimedia encryption by executing the steps." Claim 24 includes a combination of steps. The steps include "acquiring a random noise only media signal," "compressing said random noise only media signal," "selecting a set of data from the compressed media signal," and "hashing the set of data into a keyword." The steps produce the computer-useable medium embodying computer program code adapted for use for multimedia encryption. There are no essential steps omitted.

Applicants' submits that claim 24 describes the invention sufficiently and particularly points out and distinctly claims the subject matter which applicant

regards as the invention and claim 24 meets the requirements of 35 U.S.C. § 112, second paragraph.

The rejection of claims 1-30 under 35 U.S.C. § 112, first paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention should be withdrawn.

35 U.S.C. § 112, Second Paragraph Rejection (Omitted Steps)

In numbered paragraph 7 of the Office Action mailed November 23, 2007, claims 1-30 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being incomplete for omitting essential steps, elements or instructions. The Office Action mailed November 23, 2007 stated:

“See MPEP § 2172.01. The preamble of claims 1 and 17 state “a system adapted for use for multimedia encryption”. The preamble of claim 10 states “a method adapted for use for multimedia encryption”. The preamble for claim 24 states “a computer-usable medium embodying computer program code adapted for use for multimedia encryption”. However the steps, elements, or instructions of the claims disclose creating a keyword. The claims omit the steps, elements, or instructions of actually encrypting any multimedia data.”

Claims Do Not Omit Essential Steps

Applicants’ claimed invention defined by independent claim 1 is “a system adapted for use for multimedia encryption.” Claim 1 includes a combination of structural elements that produce the system adapted for use for multimedia encryption. The structural elements include “acquisition means for acquiring a media signal,” “data compression means coupled to said acquisition means to receive and compress said media signal,” “data acquisition means coupled to said data compression means to receive and select a set of data from the compressed data stream,” and “hashing means coupled to said data acquisition means to receive and hash the set of data into a keyword.” These

structural elements produce the system adapted for use for multimedia encryption. There are no essential structural elements omitted.

Applicants' submits that claim 1 is not incomplete for omitting essential elements, and claim 1 meets the requirements of 35 U.S.C. § 112, second paragraph.

Applicants' claimed invention defined by independent claim 10 is "a method adapted for use for multimedia encryption." Claim 10 includes a combination of steps. The steps include "acquiring a random noise only media signal," "compressing said random noise only media signal," "selecting a set of data from the compressed media signal," and "hashing the set of data into a keyword." There are no essential steps omitted.

Applicants' submits that claim 10 is not incomplete for omitting essential steps, and claim 10 meets the requirements of 35 U.S.C. § 112, second paragraph.

Applicants' claimed invention defined by independent claim 17 is "a system adapted for use for multimedia encryption." Claim 17 includes a combination of structural elements that produce the system adapted for use for multimedia encryption. The structural elements include "acquisition means for acquiring a media signal," "data compression means coupled to said acquisition means to receive and compress said media signal," "selection means coupled to said data compression means for selecting a set of data from the compressed data stream," and "hashing means coupled to said selection means for hashing the set of data into a keyword." These structural elements produce the system adapted for use for multimedia encryption. There are no essential structural elements omitted.

Applicants' submits that claim 17 is not incomplete for omitting essential elements, and claim 17 meets the requirements of 35 U.S.C. § 112, second paragraph.

Applicants' claimed invention defined by independent claim 24 is "a computer-useable medium embodying computer program code adapted for use for multimedia encryption by executing the steps." Claim 24 includes a combination of steps. The steps include "acquiring a random noise only media signal," "compressing said random noise only media signal," "selecting a set of data from the compressed media signal," and "hashing the set of data into a keyword." The steps produce the computer-useable medium embodying computer program code adapted for use for multimedia encryption. There are no essential steps omitted.

Applicants' submits that claim 24 is not incomplete for omitting essential steps, and claim 24 meets the requirements of 35 U.S.C. § 112, second paragraph.

The rejection of claims 1-30 under 35 U.S.C. § 112, first paragraph, as allegedly being incomplete for omitting essential steps, elements or instructions should be withdrawn.

SUMMARY

The undersigned respectfully submits that in view of the foregoing remarks the rejections of the claims raised in the Office Action mailed November 23, 2007 have been fully addressed and overcome, and the present application is believed to be in condition for allowance. Applicants' invention defined by claims 1-30 provides a system and method adapted for use for multimedia encryption that complies with the written description requirement, is based on a disclosure which is enabling, includes all essential steps, elements, and instructions, and is directed to statutory subject matter. It is respectfully requested that claims 1-30 be allowed.

If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to call the undersigned attorney at (925) 424-6897.

Respectfully submitted,



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Dated: February 6, 2008